

AMENDMENTS TO THE CLAIMS:

This listing of claims replaces all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) A method of rendering a pencil-sketch image from three-dimensional data, comprising:

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determining a pencil-sketch texture for a polygon defined by the three-dimensional data, wherein the pencil-sketch texture is comprised of tiles, and wherein determining the pencil sketch texture comprises obtaining texture values for vertices of the polygon and, in a case where all vertices do not have the same texture value, assigning the pencil-sketch texture to the polygon based on a texture value of a majority of the vertices of the polygon;

projecting the polygon onto a two-dimensional surface; and

mapping the pencil-sketch texture onto the polygon to render the pencil-sketch image, wherein mapping comprises arranging the tiles so that there is substantial continuity between pencil-sketch markings in selected ~~at least some of the~~ tiles, and wherein the substantial continuity is determined based on at least one of tangents to the pencil-sketch markings in the selected tiles and approximations of derivatives of the pencil-sketch markings in the selected tiles, the approximations being obtained by wrapping the pencil sketch marking in the selected tiles around edges of the selected tiles.

2. (Original) The method of claim 1, further comprising:

obtaining a set of pencil-sketch markings; and

constructing the pencil-sketch texture using the pencil-sketch markings.

3. (Original) The method of claim 2, wherein constructing comprises arranging the pencil sketch markings at a predetermined density such that the pencil sketch markings are at least one of parallel and perpendicular to one another.

4. (Original) The method of claim 1, further comprising:

selecting a background onto which the pencil sketch image is rendered.

5. (Previously Presented) The method of claim 1, wherein each texture value is obtained based on a normal vector to the polygon and a light vector between the polygon and a light source; and

assigning the pencil-sketch texture comprises:

classifying the polygon based on a texture value for the polygon; and

associating the pencil-sketch texture with the polygon based on the

classification of the polygon.

6. (Original) The method of claim 5, wherein the normal vector is a vertex normal of the polygon.

7. (Currently Amended) The method of claim 5, wherein ~~the~~ a texture value is obtained by calculating the vector dot product of the normal vector and the light vector.

8. (Original) The method of claim 5, wherein the polygon is classified by associating the polygon with one of M ( $M \geq 1$ ) bins, each of the M bins corresponding to a predetermined range of values.

9. (Original) The method of claim 8, wherein the pencil-sketch texture is associated with the polygon based on which of the N bins into which the polygon falls.

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10. (Original) The method of claim 1, wherein the three-dimensional data defines a three-dimensional model; and

the method further comprises:

re-positioning the three-dimensional model relative to the two-dimensional surface;  
and

repeating determining, projecting and mapping for a second polygon on the three-dimensional model to render a second pencil-sketch image.

11. (Currently Amended) An article comprising:  
a readable medium that stores executable instructions to render a pencil-sketch image from three-dimensional data, the instructions for causing a machine to:

determine a pencil-sketch texture for a polygon defined by the three-dimensional data, wherein the pencil-sketch texture is comprised of tiles, and wherein determining the pencil sketch texture comprises obtaining texture values for vertices of the polygon and, in a case where all vertices do not have the same texture value, assigning the pencil-sketch texture to the polygon based on a texture value of a majority of the vertices of the polygon;

project the polygon onto a two-dimensional surface; and

map the pencil-sketch texture onto the polygon to render the pencil-sketch image, wherein mapping comprises arranging the tiles so that there is substantial continuity between pencil-sketch markings in selected ~~at least some of the~~ tiles, and wherein the substantial continuity is determined based on at least one of tangents to pencil-sketch markings in the selected tiles and approximations of derivatives of the pencil-sketch markings in the selected tiles, the approximations being obtained by wrapping the pencil sketch marking in the selected tiles around edges of the selected tiles.

12. (Original) The article of claim 11, further comprising instructions that cause the machine to:

obtain a set of pencil-sketch markings; and

construct the pencil-sketch texture using the pencil-sketch markings.

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13. (Original) The article of claim 12, wherein constructing comprises arranging the pencil sketch markings at a predetermined density such that the pencil sketch markings are at least one of parallel and perpendicular to one another.

14. (Original) The article of claim 11, further comprising instructions that cause the machine to:

select a background onto which the pencil sketch image is rendered.

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15. (Previously Presented) The article of claim 11, wherein each texture value is obtained based on a normal vector to the polygon and a light vector between the polygon and a light source; and

assigning the pencil-sketch texture comprises:

classifying the polygon based on a texture value for the polygon; and

associating the pencil-sketch texture with the polygon based on the classification of the polygon.

16. (Original) The article of claim 15, wherein the normal vector is a vertex normal of the polygon.

17. (Currently Amended) The article of claim 15, wherein ~~the~~ a texture value is obtained by calculating the vector dot product of the normal vector and the light vector.

18. (Original) The article of claim 15, wherein the polygon is classified by associating the polygon with one of  $M$  ( $M \geq 1$ ) bins, each of the  $M$  bins corresponding to a predetermined range of values.

19. (Original) The article of claim 18, wherein the pencil-sketch texture is associated with the polygon based on which of the  $N$  bins into which the polygon falls.

20. (Original) The article of claim 11, wherein the three-dimensional data defines a three-dimensional model; and

the article further comprises instructions that cause the machine to:

re-position the three-dimensional model relative to the two-dimensional surface; and

repeat determining, projecting and mapping for a second polygon on the three-dimensional model to render a second pencil-sketch image.

21. (Currently Amended) An apparatus for rendering a pencil-sketch image from three-dimensional data, comprising:

a memory that stores executable instructions; and

a processor that executes the instructions to:

determine a pencil-sketch texture for a polygon defined by the three-dimensional data, wherein the pencil-sketch texture is comprised of tiles, and wherein determining the pencil sketch texture comprises obtaining texture values

for vertices of the polygon and, in a case where all vertices do not have the same texture value, assigning the pencil-sketch texture to the polygon based on a texture value of a majority of the vertices of the polygon;

project the polygon onto a two-dimensional surface; and

map the pencil-sketch texture onto the polygon to render the pencil-sketch image, wherein mapping comprises arranging the tiles so that there is substantial continuity between pencil-sketch markings in selected ~~at least some of the~~ tiles, and wherein the substantial continuity is determined based on at least one of tangents to the pencil-sketch markings in the selected tiles and approximations of derivatives of the pencil-sketch markings in the selected tiles, the approximations being obtained by wrapping the pencil sketch markings in the selected tiles around edges of the selected tiles.

22. (Original) The apparatus of claim 21, wherein the processor executes instructions to:

obtain a set of pencil-sketch markings; and

construct the pencil-sketch texture using the pencil-sketch markings.

23. (Original) The apparatus of claim 22, wherein constructing comprises arranging the pencil sketch markings at a predetermined density such that the pencil sketch markings are at least one of parallel and perpendicular to one another.

24. (Original) The apparatus of claim 21, wherein the processor executes instructions to:

select a background onto which the pencil sketch image is rendered.

25. (Previously Presented) The apparatus of claim 21, wherein each texture value is obtained based on a normal vector to the polygon and a light vector between the polygon and a light source; and

assigning the pencil-sketch texture comprises:

classifying the polygon based on the value; and

associating the pencil-sketch texture with the polygon based on the classification of the polygon.

26. (Original) The apparatus of claim 25, wherein the normal vector is a vertex normal of the polygon.

27. (Currently Amended) The apparatus of claim 25, wherein ~~the~~ a texture value is obtained by calculating the vector dot product of the normal vector and the light vector.

28. (Original) The apparatus of claim 25, wherein the polygon is classified by associating the polygon with one of M ( $M \geq 1$ ) bins, each of the M bins corresponding to a predetermined range of values.



29. (Original) The apparatus of claim 28, wherein the pencil-sketch texture is associated with the polygon based on which of the N bins into which the polygon falls.

30. (Original) The apparatus of claim 21, wherein the three-dimensional data defines a three-dimensional model; and

the processor executes instructions to:

re-position the three-dimensional model relative to the two-dimensional surface;

and

repeat determining, projecting and mapping for a second polygon on the three-dimensional model to render a second pencil-sketch image.

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